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Abstract

Steam turbine rotor, steam turbine and method for actively cooling a steam turbine rotor and use of active cooling

In previously known steam turbines (1) a rotor is either only cooled passively or is cooled actively only to a limited extent in a region where the working medium flows in. As the loading on the rotor increases as a result of high steam parameters of the working medium, sufficient cooling of the steam turbine rotor is no longer ensured. The proposed steam turbine rotor (21, 30, 75) extends along an axial extent (25, 34) and includes: an outer side (26a) which adjoins an outer space (27a, 35) which is intended to receive a main flow (27, 36) of a fluid working medium (8), a first location (30a) along the outer side (26a), at which a first blade (41a) is held, a second location (30b) along the outer side (26a, 33), at which a second blade (41b) is held, the second location (30b) being arranged behind the first location (30a) along the axial extent (25, 34). To ensure sufficient cooling, there is at least one integrated passage (44, 46a, 46b, 93, 96, 103, 106), which extends continuously at least between a first region (28a, 72) arranged in front of the first location (30a) and a second region (28b, 73) arranged behind the second location (30b). The invention proposes a method and a use in which a fluid cooling medium (10) is guided in a corresponding way.

Fig. 2